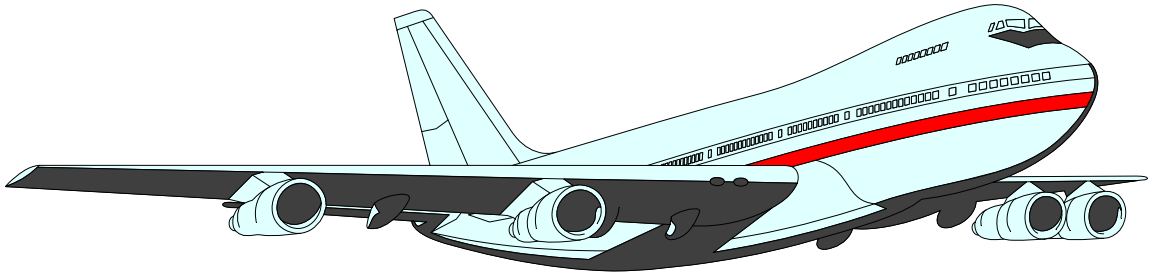
FAA-G-8082-9D

FLIGHT ENGINEER
KNOWLEDGE TEST GUIDE



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INTRODUCTION

What is required to become a skilled and effective flight engineer? Although some individuals possess more knowledge and skills than others, no one is a natural-born engineer. Competent engineers become so through study, training, and experience.

This knowledge test guide will answer most of your questions about taking a Flight Engineer Knowledge Test by covering the following areas: knowledge test eligibility requirements; knowledge areas on the tests; descriptions of the tests; process for taking a knowledge test; validity of airman knowledge test reports; use of test aids and materials; testing procedures for applicants with learning or reading disabilities; cheating or other unauthorized conduct; and retesting procedures. You will find sample test questions for each category, topics that are tested on specific to the Flight Engineer Knowledge Tests, a listing of reference/study materials, testing center contact information, and a listing of definitions used through this guide. This document supersedes FAA-S-8082-9C dated 2008.

This guide will help in preparing you to take one or all of the following tests.

TEST NAME	TEST CODE
Flight Engineer Turbojet/Basic	FEX
Flight Engineer Turboprop/Basic	FET
Flight Engineer Reciprocating Engine/Basic	FEN
Flight Engineer Turbojet (added rating)	FEJ
Flight Engineer Turboprop (added rating)	FEP
Flight Engineer Reciprocating Engine (added rating)	FER

At one time, the flight engineer functioned as an inflight maintenance person. Today, the flight engineer is a technical expert, who must be thoroughly familiar with the operation and function of various airplane components. The principal function of the flight engineer is to assist the pilots in the operation of the airplane. Specific duties vary with different airplanes and operators.

The questions and answers on the Flight Engineer Knowledge Tests pertain only to airplanes that require a flight engineer. Because the questions and answers cover a wide scope of airplanes, powerplants, and systems, some questions are general in nature. The information contained in the questions and answers should never take precedence over specific information furnished by a manufacturer in the operation of an airplane.

This guide is not offered as an easy way to obtain the necessary information for passing the knowledge tests. Rather, the intent of this guide is to define and narrow the field of study to the required knowledge areas included in the above tests.

Federal Aviation Administration (FAA) airman knowledge tests are effective instruments for measuring aviation safety and regulation knowledge. However, these tests can only sample the vast amount of knowledge every pilot needs to operate safely in the National Airspace System (NAS).

KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS

Prior to taking a Flight Engineer Knowledge Test, you must be able to read, speak, and understand the English language; have appropriate documentation to verify that you are 19

years of age; and meet the experience requirements of Title 14 of the Code of Federal Regulation (14 CFR) part 63, section 63.37.

The proof of age may be satisfied by presenting photo identification, such as a driver's license, a government or military identification card, passport, or similar identification.

To verify that you meet the experience requirements of 14 CFR part 63, section 63.37, it is necessary to obtain a written statement and signature from one of the following authorized persons:

- A qualified flight engineer with the appropriate class rating
- A U.S. Armed Forces flight engineer instructor for the same class of airplane
- A flight engineer instructor associated with 14 CFR part 121 training program
- An FAA Aviation Safety Inspector (operations/airworthiness)

The endorser must include a statement that they have personally verified that you meet the experience requirements of 14 CFR part 63, section 63.37. They must also identify their position, such as flight engineer certificate number, name of the training facility, and FAA inspector's office identification.

The verification of experience requirements is not required if you hold one of the following:

- A commercial pilot certificate with an instrument rating or an Airline Transport Pilot certificate issued by the FAA
- A foreign unrestricted commercial pilot or Airline Transport Pilot license issued by an International Civil Aviation Organization (ICAO) member state
- A passed, failed, or expired original test report for that specific test

You may take an additional class rating knowledge test without further demonstration of eligibility if you possess a Flight Engineer Certificate or an original Flight Engineer Test Report.

For a summary of knowledge test eligibility requirements for all certification areas listed above, refer to the FAA Airman Knowledge Testing Authorization Matrix located at:

http://www.faa.gov/training_testing/airmen/media/testing_matrix.pdf

KNOWLEDGE AREAS ON THE TESTS

You must pass a knowledge test on the areas specified by 14 CFR part 63, section 63.35. The areas are arranged in the following order on the knowledge tests: applicable Code of Federal Regulations; theory of flight and aerodynamics; meteorology with respect to engine operations; operating procedures (Pre-flight, normal, and emergency); airplane equipment; airplane systems; limitations (airplane procedures and engine operations); and math computations (engine operations, fuel consumption, center of gravity, and airplane loading).

LEARNING STATEMENTS

Learning statements, as used in airman testing, refer to a measurable level of knowledge a student should be able to demonstrate following a defined element of training. The most current Learning Statement Reference Guide for Airman Knowledge Testing is online at:

www.faa.gov/training_testing/testing/airmen/media/LearningStatementReferenceGuide.pdf

We provide learning statements to help instructors and students become more familiar with the areas of knowledge applicable to the airman training, learning, studying, and testing processes.

Beyond serving as a useful reference in preparing for your airman knowledge test, the Learning Statement Reference Guide will assist you and your instructor in interpreting any learning statement codes that may appear on your Airman Knowledge Test Report. You will receive a test report immediately upon completion of the test. This report will list learning statement codes for any questions you may have answered incorrectly. You and your instructor should match the codes on the test report to the information in the Learning Statement Reference Guide in order to obtain the corresponding areas of knowledge deficiency.

Your instructor may be required to provide instruction on each of the areas of deficiency, and to provide a logbook or training record endorsement certifying you have demonstrated satisfactory knowledge in each area. Also, you must present the *original* Airman Knowledge Test Report to the examiner conducting your practical test. During the practical test, the examiner will refer to the learning codes and statements to evaluate your knowledge in the noted areas of deficiency.

DESCRIPTIONS OF THE TESTS

All test questions are the objective, multiple-choice type. Each question can be answered by the selection of a single response. Each test question is independent of other questions; therefore, a correct response to one does not depend upon, or influence, the correct response to another. **The minimum passing score is 70 percent.**

The following tests are for original class ratings and each contains 80 questions. You are allowed 3 hours to complete each test.

- Flight Engineer Turbojet/Basic (FEX)
- Flight Engineer Turboprop/Basic (FET)
- Flight Engineer Reciprocating Engine/Basic (FEN)

If you desire to add a class rating to your flight engineer certificate, you must successfully complete a knowledge test appropriate to the desired class rating. The following tests are for additional class ratings and each contains 50 questions. You are allowed 2 hours to complete each test.

- Flight Engineer Turbojet (added rating) (FEJ)
- Flight Engineer Turboprop (added rating) (FEP)
- Flight Engineer Reciprocating Engine (added rating) (FER)

TEST REGISTRATION

The FAA has designated two Airman Knowledge Testing (AKT) Organization Designation Authorization (ODA) Holders, which sponsor hundreds of knowledge testing center locations. These testing centers offer a full range of airman knowledge tests including: Aircraft Dispatcher, Airline Transport Pilot, Aviation Maintenance Technician, Commercial Pilot, Flight Engineer, Flight Instructor, Flight Navigator, Ground Instructor, Inspection Authorization, Instrument Rating, Parachute Rigger, Private Pilot, Recreational Pilot, Sport Pilot and Military Competence.

The first step in taking a knowledge test is the registration process. You may either call a central registration phone number or appear at a testing center on a walk-in basis. If you choose to use a central registration phone number to schedule your test, you will need to be prepared to select

a test date, choose a testing center, and make financial arrangements for test payment. You may register for tests several weeks in advance, and you may cancel your appointment according to the AKT ODA Holder's cancellation policy. If you do not follow the AKT ODA Holder's cancellation policies, you could be subject to a cancellation fee.

APPLICANT INDENTIFICATION AND TEST AUTHORIZATION

The next step in taking a knowledge test is providing proper identification. You should determine what knowledge test prerequisites are necessary before going to the computer testing center. Your instructor or local FAA Flight Standards District Office (FSDO) may advise you regarding the documentation required to be presented at the testing facility. Testing center personnel will not begin the test until your identification and eligibility is verified.

Acceptable forms of authorization:

- Certificate of graduation issued by a FAA certified pilot school (14 CFR § 61.71 (a)).
- Written statement or logbook endorsement from an authorized ground or flight instructor certifying that the applicant completed an applicable ground training or home study course and is prepared for the knowledge test (14 CFR § 61.96 (b)(3) or 61.103 (d)).
- Failed Airman Knowledge Test Report, passing Airman Knowledge Test Report, or expired Airman Knowledge Test Report (pass or fail), provided that you still have the original Airman Knowledge Test Report in your possession.

TEST TAKING TIPS

Prior to launching the actual test, the AKT ODA Holder's testing software will provide you with an opportunity to practice navigating through the test. This practice (or tutorial) session may include a "sample" question(s). These sample questions have no relation to the content of the test, but are meant to familiarize you with the look and feel of the system screens, including selecting an answer, marking a question for later review, time remaining for the test, and other features of the testing software.

When taking a test, keep the following points in mind:

- Carefully read the instructions given with the test.
- Answer each question in accordance with the latest regulations and guidance publications.
- Read each question carefully before looking at the answer options. You should clearly understand the problem before attempting to solve it.
- After formulating an answer, determine which answer option corresponds with your answer. The answer you choose should completely resolve the problem.
- From the answer options given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete, erroneous, or derived from popular misconceptions.
- If a certain question is difficult for you, it is best to mark it for review and proceed to the next question. After you answer the less difficult questions, return to those you marked for review and answer them. The review marking procedure will be explained to you prior to starting the test. Although the computer should alert you to unanswered questions, make sure every question has an answer recorded. This procedure will enable you to use the available time to maximum advantage.
- When solving a calculation problem, select the answer that most nearly matches your solution. The problem has been checked by various individuals and with different types

of calculators; therefore, if you have solved it correctly, your answer will be closer to the correct answer than any of the other choices.

USE OF TEST AIDS AND MATERIALS

You may use aids, reference materials, and test materials within the guidelines listed below, as long as, actual test questions or answers are not revealed. All models of aviation-oriented calculators may be used, including small electronic calculators that perform only arithmetic functions (add, subtract, multiply, and divide). Simple programmable memories, which allow addition to, subtraction from, or retrieval of one number from the memory, are permissible. Also, simple functions, such as square root and percent keys are permissible.

The following guidelines apply:

1. You may use any reference materials provided with the test. In addition, you may use scales, straightedges, protractors, plotters, navigation computers, log sheets, and electronic or mechanical calculators that are directly related to the test.
2. Manufacturer's permanently inscribed instructions on the front and back of such aids (e.g., formulas, conversions, regulations, signals, weather data, frequencies, weight-and-balance formulas) are permissible.
3. Testing centers may provide a calculator to you and/or deny use of your personal calculator based on the following limitations:
    a. Prior to, and upon completion of the test, while in the presence of the proctor, you must actuate the ON/OFF switch and perform any other function that ensures erasure of any data stored in memory circuits.
    b. The use of electronic calculators incorporating permanent or continuous type memory circuits without erasure capability is prohibited. The proctor may refuse the use of your calculator when unable to determine the calculator's erasure capability.
    c. Printouts of data must be surrendered at the completion of the test if the calculator incorporates this design feature.
    d. The use of magnetic cards, magnetic tapes, modules, computer chips, or any other device upon which pre-written programs or information related to the test can be stored and retrieved is prohibited.
    e. You are not permitted to use any booklet or manual containing instructions related to use of test aids.
4. Dictionaries are not allowed in the testing area.
5. The proctor makes the final determination relating to test materials and personal possessions you may take into the testing area.

TESTING PROCEDURES FOR APPLICANTS REQUESTING SPECIAL ACCOMMODATIONS

If you are an applicant with a learning or reading disability, you may request approval from the local FSDO or FAA International Field Office (IFO) to take an airman knowledge test using the special accommodations procedures outline in FAA Order 8080.6 (as amended), Conduct of Airman Knowledge Tests.

Prior to approval of any option, the FSDO or IFO Aviation Safety Inspector must advise you of the regulatory certification requirement of being able to read, write, speak, and understand the English language.

CHEATING OR OTHER UNAUTHORIZED CONDUCT

Computer testing centers must follow strict security procedures to avoid test compromise. These procedures are established by the FAA and are covered in FAA Order 8080.6 (as amended), Conduct of Airman Knowledge Tests. The FAA has directed testing centers to terminate a test at any time a test proctor suspects a cheating incident has occurred. An FAA investigation will then be conducted. If the investigation determines that cheating or unauthorized conduct has occurred, then any airman certificate or rating that you hold may be revoked, and you may be prohibited for 1 year from applying for or taking any test for a certificate or rating under 14 CFR part 61.

TEST REPORTS

Airman Knowledge Test Reports are valid for the 24-calendar months. If the Airman Knowledge Test Report expires before completion of the practical test, you must retake the knowledge test.

Upon completion of the knowledge test, you will receive your Airman Knowledge Test Report, which reflects your score. The test report will be stamped with the testing center's raised/embossed seal.

The Airman Knowledge Test Report lists the learning statement codes for questions answered incorrectly. The total number of learning statement codes shown on the Airman Knowledge Test Report is not necessarily an indication of the total number of questions you might have answered incorrectly. You should match the code with the learning statement code contained in the Learning Statement Reference Guide for Airman Knowledge Testing document to review areas of deficiency.

The most current Learning Statement Reference Guide for Airman Knowledge Testing can be found at:

www.faa.gov/training_testing/testing/airmen/media/LearningStatementReferenceGuide.pdf

The learning statement codes, as used in airman testing, refer to a measurable statement of knowledge that a student should be able to demonstrate following a defined element of training.

Your instructor is required to provide instruction on each of the areas of deficiency listed on your Airman Knowledge Test Report and to complete an endorsement of this instruction. The Airman Knowledge Test Report must be presented to the examiner conducting the practical test. During the oral portion of the practical test, the examiner is required to evaluate the noted areas of deficiency.

Should you require a duplicate Airman Knowledge Test Report due to loss or destruction of the original, send a signed request accompanied by a check or money order for $1.00, payable to the FAA.

Federal Aviation Administration
Airmen Certification Branch, AFS-760
P.O. Box 25082
Oklahoma City, OK 73125

RETESTING PROCEDURES

If you wish to retest, you must present the testing center with your original failed, passing, or expired Airman Knowledge Test Report, if you still have the test report in your possession. If

you no longer have your original test report, you may present an expired test/credit letter issued by the FAA Airmen Certification Branch.

If you with to retest after failure, you are required to submit the applicable test report indicating failure, along with an endorsement from an authorized instructor who gave you the required additional training. The endorsement must certify you are competent to pass the test. The original failed test report presented as authorization must be retained by the proctor and attached to the applicable sign-in/out log.

If you wish to retest in hopes of achieving a higher score, you may retake the same test 30 days after the date of your last attempt. You are required to submit the original applicable test report to the testing center. The score of the last test taken will be your new official score.

Classification Code: the (usually hierarchical) sequence of classification codes that places an item in a unique category. FAA knowledge test item development use the following hierarchy:

- Topic— Overall subject matter topic code. The highest classification of overall subject matter a knowledge test item was developed to assess. (e.g., Aerodynamics)
- Content—Secondary level subject matter code (e.g. , Airspeed)
- Specific— the basic hierarchical classification code the subject matter for a knowledge test item.(e.g., Thrust)

Flight Engineer Turbojet/Basic (FEX)
Sample Questions

FLIGHT ENGINEER TURBOJET/BASIC (FEX)

1. While starting a turbine engine with an air starter, a hung start occurs before the starter disengages. Which procedure is correct?

A—Shut down the engine.
B—Increase the air velocity to the starter.
C—Slowly increase the power lever until the engine accelerates to idle.

Answer: A.
Learning Statement: Recall starter engine-starting procedures.

2. What is the highest ambient temperature that ice is likely to form in the engine inlet?

A—visibly moist air and +45 °F.
B—visibly moist air and +70 °F.
C—relatively dry air and +32 °F.

Answer: A.
Learning Statement: Recall effects of temperature-density altitude/icing.

3. Thermal protectors are used to

A—stop windshield heaters from melting the glass.
B—protect motors from overheating.
C—allow pitot heaters to melt any icing near the tube.

Answer: B.
Learning Statement: Recall electrical system-components/operating principles/characteristics/ static bonding and shielding.

4. What recovery would be appropriate in the event of compressor stall?

A—reduce the thrust lever and then rapidly advance the thrust lever to decrease the angle of attack on the compressor blades, creating more airflow.
B—reduce the thrust lever and then follow the procedures in the AFM/POH/CFM.
C—advance the thrust lever slowly to increase airflow and decrease the angle of attack on one or more compressor blades.

Answer: B.
Learning Statement: Recall turbine engines-components/operational characteristics/associated instruments.

5. (Refer to figures 46 and 47) What is the airplane weight at the end of cruise under operating conditions No. 2?

A—100,860 pounds.
B—101,900 pounds.
C—110,900 pounds.

Answer: A.
Learning Statement: Calculate weight and balance.

LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOJET/BASIC (FEX)

Topic	*Content*	*Specific*
PLT002		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Airspeed
Aircraft Performance	Limitations	Airspeeds
PLT003		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Center of Gravity	TCDS
Type Certificate Data Sheets and Specifications		
Weight and Balance	Center of Gravity	TCDS
PLT007		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	EPRs
PLT011		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	EPRs
Aircraft Performance	Charts	Takeoff Power
Aircraft Performance	Charts	Temperature
PLT012		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	NM/1000#
PLT016		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Aircraft Performance	Computations	Fuel Dump
PLT018		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Load Factor
PLT021		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Definitions
Weight and Balance	Aircraft Loading	Formulas
Weight and Balance	Center of Gravity	% of MAC
Weight and Balance	Center of Gravity	Shifting Weight
PLT028		
14 CFR 1		
Regulations	14 CFR Part 1	Flight Crew Member
PLT041		
AC 00-6 Aviation Weather		
Weather	Meteorology	Pressure
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Systems	Flight Instruments	Altimeter
PLT094		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Definitions
PLT095		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Forces Acting on Aircraft
PLT108		
AC 120-58 Pilot Guide for Large Aircraft Ground Deicing		
Airport Operations	Ground Deicing	Glycol
Airport Operations	Ground Deicing	Glycol Properties/Mixtures
Airport Operations	Ground Deicing	Procedures/Good Practices
Airport Operations	Ground Deicing	Temperature
Airport Operations	Ground Deicing	Types
AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft		
Airport Operations	Ground Deicing	Temperature
Airport Operations	Ground Deicing	Two Step Deice/Anti-ice
PLT109		
AC 00-33A- Nickel-Cadmium Battery Op/Man/Overhaul Practices		
Aircraft Systems	Electrical	Batteries/Maintenance/Hazards

PLT110

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Landing Gear	Brake System Operation and Components
Aircraft Systems	Landing Gear	Brakes

PLT114

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Airport Operations	Pre-flight	Aluminum Corrosion
Airport Operations	Pre-flight	Self-Locking Nuts

PLT118

14 CFR 121

Regulations	14 CFR Part 121	Emergency Instruments

PLT121

Aircraft Weight and Balance Handbook, FAA-H-8083-1

Weight and Balance	Center of Gravity	Shifting Weight

PLT124

AC 00-6 Aviation Weather

Aircraft Performance	Atmospheric Effects	Atmospheric Density
Weather	Meteorology	Air Masses

Airplane Flying Handbook, FAA-H-8083-3A

Aircraft Performance	Atmospheric Effects	Temperature

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Atmospheric Effects	Airspeed

PLT132

14 CFR 1

Regulations	14 CFR Part 1	V-speeds
Regulations	14 CFR Part 1	V2

Aeronautical Information Manual

Weather	Meteorology	Pressure

PLT135

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Pressurization/Valves/Controls/Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Charts	Cabin Pressure Altitude

PLT136

AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems

Aircraft Systems	Powerplant	Turbine Characteristics

PLT137

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Vapor Cycling Cooling/Component/Operation

PLT138

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Landing Gear	Fusible Plugs
Aircraft Systems	Landing Gear	Tires
Aircraft Systems	Landing Gear	Wheels

PLT139

14 CFR 121

Aircraft Systems	Landing Gear	Retracted Safety/Warning System
Regulations	14 CFR Part 121	TAWS

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Fire Control	Sensors/Testing/Operation

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Fire Control	Sensors/Testing/Operation

PLT166

AC 00-6 Aviation Weather

Weather	Meteorology	Pressure

Aeronautical Information Manual

Aircraft Systems	Flight Instruments	Altimeter
Instruction Procedures	En Route	Altimeter Setting Procedures

PLT168

Airplane Flying Handbook, FAA-H-8083-3A

Aerodynamics	Principles of Flight	Forces Acting on Aircraft

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Principles of Flight	Angle of Attack
Aerodynamics	Principles of Flight	Forces Acting on Aircraft

PLT173
AC 00-6 Aviation Weather
Weather | Meteorology | Atmosphere
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Weather | Meteorology | Atmosphere
Weather | Meteorology | Pressure

PLT174
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Controls/Secondary | Yaw Dampener

PLT196
Aeronautical Information Manual
Weather | Aeronautical Weather Reports | ATIS

PLT203
AC 00-6 Aviation Weather
Weather | Meteorology | Atmosphere
Weather | Meteorology | High Altitude

PLT205
14 CFR 91
Regulations | 14 CFR Part 91 | Alcohol/Drug Limitations

PLT207
14 CFR 121
Regulations | 14 CFR Part 121 | Emergency Lights
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Electrical | Generators/Alternators/Controls/Systems

PLT208
Aeronautical Information Manual
Flight Operations | Emergency Procedures | Declare an Emergency

PLT209
Pilot Guide Flight in Icing Conditions
Aircraft Systems | Powerplant | Engine Instruments

PLT210
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Operation
Aircraft Systems | Powerplant | Turbine Components/Functions

PLT212
14 CFR 1
Regulations | 14 CFR Part 1 | Definitions
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fire Control | Extinguishing Agent/System/Pre-flight
Aircraft Systems | Fire Control | Sensors/Testing/Operation
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Fire Control | Extinguishing Agent/System/Pre-flight
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Flight Operations | Emergency Procedures | Electrical Fires
Flight Operations | Emergency Procedures | Flammable Fluid Fires
Flight Operations | Emergency Procedures | Ground Emergencies

PLT214
Airplane Flying Handbook, FAA-H-8083-3A
Aerodynamics | Flight Characteristics | Swept/Tapered Wing
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Swept/Tapered Wing
Aerodynamics | Flight Characteristics | Wing/Airfoil Characteristics

PLT235
Airplane Flying Handbook, FAA-H-8083-3A
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT236
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Wing/Airfoil Characteristics

PLT237
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Performance | Atmospheric Effects/Density/Pressure Altitudes

PLT240
Type Certificate Data Sheets and Specifications
Weight and Balance | Center of Gravity | TCDS

PLT242
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT245
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Performance | Atmospheric Effects/Density/Pressure Altitudes

PLT248
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT251
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Fuel/Oil | Specifications

PLT253
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Fuel Heat

PLT263
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Deicing/Anti-Icing | Anti-icing/Deicing Equipment

PLT266
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aerodynamics | Airfoils | Slots

PLT273
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Hydraulic | Hazards

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Accumulators
Aircraft Systems | Hydraulic | Specifications

PLT274
AC 00-6 Aviation Weather
Weather | Meteorology | Icing

Pilot Guide Flight in Icing Conditions
Aircraft Systems | Deicing/Anti-Icing | Ambient Temperature

PLT278
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Performance | Atmospheric Effects | Temperature

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Instruments | Mach Meter

PLT303
Aerodynamics for Naval Aviators
Aerodynamics | Principles of Flight | Angle of Attack

PLT310
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Load Factor | Atmospheric Criteria
Aerodynamics | Performance | Weights/V-speeds/Runway Lengths

PLT313
Aircraft Weight and Balance Handbook, FAA-H-8083-1
Weight and Balance | Aircraft Loading | Definitions

PLT318
Aeronautical Information Manual
Flight Operations | Normal Procedures | Minimum Fuel Advisory

PLT324
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Oil System
Aircraft Systems | Fuel/Oil | Oil System Failure Modes

PLT326
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Gaseous Oxygen
Aircraft Systems | Environmental | Oxygen

Aeronautical Information Manual
Human Factors | Aero-medical | Oxygen Mask Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Environmental | Oxygen
Human Factors | Aero-medical | Anoxia

PLT327
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Gaseous Oxygen
Aircraft Systems | Environmental | Oxygen

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

PLT338

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Pneumatics	Pneumatics

PLT343

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Atmospheric Effects	Temperature
Aircraft Performance	Density Altitude	Humidity/Temperature/Air Density

PLT346

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Flight Controls/Primary	Ailerons

PLT347

14 CFR 1

Regulations	14 CFR Part 1	Critical Engine

PLT368

14 CFR 121

Regulations	14 CFR Part 121	Admission to Flight Deck

PLT385

14 CFR 121

Regulations	14 CFR Part 121	Cargo/Passenger Compartment

14 CFR 91

Regulations	14 CFR Part 125	Part 91 Operations

PLT386

14 CFR 63

Regulations	14 CFR Part 63	Certificate

PLT388

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Regulations	14 CFR Part 121	Data Retention
Regulations	14 CFR Part 121	Flight Recorder

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PLT473
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Flight Controls/Secondary | Servo Tabs
Aircraft Systems | Flight Controls/Secondary | Tabs
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Controls/Primary | Ailerons
Aircraft Systems | Flight Controls/Secondary | Servo Tabs
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PLT478

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Aircraft Systems	Powerplant	Starters

PLT479

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Start
Aircraft Systems	Powerplant	Starting

PLT480

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Flight Characteristics	Stability/Control

PLT493

AC 00-6 Aviation Weather

Weather	Meteorology	Icing

AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

Weather	Hazardous	Icing

Instrument Flying Handbook, FAA-H-8083-15

Weather	Hazardous	Icing

PLT495

AC 00-6 Aviation Weather

Aircraft Systems	Electrical	Static Wicks/Lightning Protection/Bonding

PLT497

Aeronautical Information Manual

Flight Operations	Emergency Procedures	Declare an Emergency
Publications	AIM	Transponder Operation

PLT499

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Instruments
Aircraft Systems	Powerplant	Engine Operation
Aircraft Systems	Powerplant	Starting
Aircraft Systems	Powerplant	Turbine Characteristics
Aircraft Systems	Powerplant	Turbine Components/Functions
Aircraft Systems	Powerplant	Turbine Compressors
Aircraft Systems	Powerplant	Turbine Sensors

Airplane Flying Handbook, FAA-H-8083-3A

Aircraft Systems	Powerplant	Turbine Characteristics
Aircraft Systems	Powerplant	Turbine Compressors

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Powerplant	Turbine Components/Functions

PLT502

Aeronautical Information Manual

Publications	AIM	Light Gun Signals

PLT509

Aeronautical Information Manual

Aerodynamics	Flight Characteristics	Vortex Generation

PLT523

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aerodynamics	Airfoils	Vortex Generators

PLT525

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

Flight Engineer Turboprop/Basic (FET)
Sample Questions

FLIGHT ENGINEER TURBOPROP/BASIC (FET)

1. During flight with zero angle of attack, the pressure along the upper surface of the wing will be

A—equal to atmospheric pressure.
B—less than atmospheric pressure.
C—greater than the pressure below the wing.

Answer: B.
Learning Statement: Recall angle of attack-characteristics/forces/principles.

2. Oil extracts the most heat from which turbine engine components?

A—Turbine bearings.
B—Compressor bearings.
C—Accessory drive bearings.

Answer: A.
Learning Statement: Recall powerplant-controlling engine temperature.

3. Why should hydraulic fluid be filtered?

A—Water in the fluid could freeze.
B—It assures a positive feed of foam free fluid to the hydraulic pump inlet.
C—Contaminants may damage the seals and cylinder walls causing internal leakage.

Answer: C.
Learning Statement: Recall hydraulic systems-components/operating principles/characteristics.

4. What precaution should be taken when using truck-mounted deice/anti-ice equipment?

A—Run the airplane engines at idle.
B—Spray engine and APU inlets directly.
C—Spray pitot inlets and static ports indirectly.

Answer: C.
Learning Statement: Recall aircraft anti-icing/deicing-methods/fluids.

5. Which maintenance task may a flight engineer perform while operating under 14 CFR part 125?

A—Landing light replacement if there is no certificated mechanic available.
B—Remove, inspect, and replace a chip detector if the malfunction occurs in a remote area.
C—Replenish hydraulic fluid in accordance with applicable regulations and the certificate holder’s manuals.

Answer: C.
Learning Statement: Recall regulations-persons authorized to perform maintenance.

LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOPROP/BASIC (FET)

Topic	*Content*	*Specific*
PLT002		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Atmospheric Effects	Airspeed
Aircraft Performance	Limitations	Airspeeds
PLT003		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Center of Gravity	TCDS
Type Certificate Data Sheets and Specifications		
Weight and Balance	Center of Gravity	TCDS
PLT011		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Takeoff Power
Aircraft Performance	Charts	Takeoff/Landing/Alternate Values
Aircraft Performance	Charts	Takeoff Power
Aircraft Performance	Charts	Temperature
PLT012		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	Fuel
PLT016		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Aircraft Performance	Computations	Fuel Dump
PLT018		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Load Factor
PLT019		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	Cabin Altitude
PLT021		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Definitions
Weight and Balance	Aircraft Loading	Formulas
Weight and Balance	Center of Gravity	Computations
Weight and Balance	Center of Gravity	Shifting Weight
PLT028		
14 CFR 1		
Regulations	14 CFR Part 1	Flight Crew Member
PLT038		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Torque in Inch-Pounds
PLT041		
AC 00-6 Aviation Weather		
Weather	Meteorology	Pressure
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Systems	Flight Instruments	Altimeter
PLT095		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Forces Acting on Aircraft
PLT108		
AC 120-58 Pilot Guide for Large Aircraft Ground Deicing		
Airport Operations	Ground Deicing	Glycol
Airport Operations	Ground Deicing	Glycol Properties/Mixtures
Airport Operations	Ground Deicing	Procedures/Good Practices
Airport Operations	Ground Deicing	Temperature
Airport Operations	Ground Deicing	Types
PLT109		
Aviation Maintenance Technician Handbook - General FAA-H-8083-30		
Aircraft Systems	Electrical	Batteries/Maintenance/Hazards

PLT114
Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Airport Operations	Pre-flight	Aluminum Corrosion
Airport Operations	Pre-flight	Self-Locking Nuts

PLT118
14 CFR 121

Regulations	14 CFR Part 121	Emergency Instruments

PLT124
AC 00-6 Aviation Weather

Aircraft Performance	Atmospheric Effects	Atmospheric Density

PLT128
AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

Weather	Hazardous	Icing

PLT132
14 CFR 1

Regulations	14 CFR Part 1	V-speeds

PLT135
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Pressurization/Valves/Controls/Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Charts	Cabin Altitude

PLT138
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Landing Gear	Fusible Plugs
Aircraft Systems	Landing Gear	Wheels

PLT139
14 CFR 121

Aircraft Systems	Landing Gear	Retracted Safety/Warning System

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Fire Control	Sensors/Testing/Operation
Aircraft Systems	Landing Gear	Retracted Safety/Warning System

PLT164
Airplane Flying Handbook, FAA-H-8083-3A

Aerodynamics	Airspeed	Wind effects

PLT166
Aeronautical Information Manual

Instrument Procedures	En Route	Altimeter Setting Procedures

PLT168
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Principles of Flight	Angle of Attack
Aerodynamics	Principles of Flight	Forces Acting on Aircraft

PLT173
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Weather	Meteorology	Pressure

PLT205
14 CFR 91

Regulations	14 CFR Part 91	Alcohol/Drug Limitations

PLT207
14 CFR 121

Aircraft Systems	Electrical	Circuit Breakers/Fuses/Relays/Switches
Regulations	14 CFR Part 121	Emergency Lights

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Electrical	Static Wicks/Lightning Protection/Bonding

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Aircraft Systems	Electrical	Circuit Breakers/Fuses/Relays/Switches
Aircraft Systems	Electrical	Generators/Alternators/Controls/Systems

PLT210
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Operation
Aircraft Systems	Powerplant	Turbine Components/Functions

PLT212
14 CFR 1

Regulations	14 CFR Part 1	Definitions

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Fire Control	Extinguishing Agent/System/Pre-flight

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Flight Operations	Emergency Procedures	Electrical Fires
Flight Operations	Emergency Procedures	Flammable Fluid Fires
Flight Operations	Emergency Procedures	Ground Emergencies

PLT235

Airplane Flying Handbook, FAA-H-8083-3A

Aerodynamics	Principles of Flight	Forces Acting on Aircraft

PLT236

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Principles of Flight	Forces Acting on Aircraft

PLT237

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Performance	Atmospheric Effects/Density/Pressure Altitudes

PLT240

Type Certificate Data Sheets and Specifications

Weight and Balance	Center of Gravity	TCDS

PLT242

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Principles of Flight	Forces Acting on Aircraft

PLT243

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Propeller	Centrifugal Twisting

PLT251

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Aircraft Systems	Fuel/Oil	Specifications

PLT273

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Hydraulic	Accumulators
Aircraft Systems	Hydraulic	Filters/System
Aircraft Systems	Hydraulic	Specifications
Aircraft Systems	Hydraulic	System Operation

PLT274

Pilot Guide Flight in Icing Conditions

Aircraft Systems	Deicing/Anti-Icing	Ambient Temperature

PLT278

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Performance	Atmospheric Effects	Temperature

PLT310

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Load Factor	Atmospheric Criteria
Aerodynamics	Performance	Weights/V-Speeds/Runway Lengths

PLT313

Aircraft Weight and Balance Handbook, FAA-H-8083-1

Weight and Balance	Aircraft Loading	Definitions

PLT318

Aeronautical Information Manual

Flight Operations	Normal Procedures	Minimum Fuel Advisory

PLT324

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Fuel/Oil	Oil System
Aircraft Systems	Fuel/Oil	Oil System Failure Modes

PLT326

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Oxygen

Aeronautical Information Manual

Human Factors	Aero-medical	Oxygen Mask Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

PLT327

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

PLT338

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Pneumatics	Pneumatics
Aircraft Systems	Pneumatics	Servicing

PLT342

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Turbine Compressors

PLT343

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Atmospheric Effects	Temperature
Aircraft Performance	Density Altitude	Humidity/Temperature/Air Density

PLT346

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Flight Controls/Primary	Ailerons

PLT347

14 CFR 1

Regulations	14 CFR Part 1	Critical Engine

PLT351

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Propeller	Beta Range
Aircraft Systems	Propeller	Feathering
Aircraft Systems	Propeller	Governor Operation
Aircraft Systems	Propeller	Propeller Forces
Aircraft Systems	Propeller	Stresses
Aircraft Systems	Propeller	Unfeathering

Airplane Flying Handbook, FAA-H-8083-3A

Aircraft Systems	Propeller	Feathering

PLT385

14 CFR 121

Regulations	14 CFR Part 121	Cargo/Passenger Compartment

14 CFR 91

Regulations	14 CFR Part 125	Part 91 Operations

PLT386

14 CFR 121

Regulations	14 CFR Part 121	International Crewmember Certificates

14 CFR 63

Regulations	14 CFR Part 63	Certificate

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Regulations	14 CFR Part 121	Data Retention

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14 CFR 121

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14 CFR 121

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Regulations	14 CFR Part 121	Emergency Lights

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14 CFR 121

Regulations	14 CFR Part 121	MEL/CDL

PLT407

14 CFR 121

Regulations	14 CFR Part 121	IOE

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14 CFR 121

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Regulations	14 CFR Part 121	Duty Time Limitations
Regulations	14 CFR Part 121	Rest Periods

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14 CFR 121

Regulations	14 CFR Part 121	Recent Experience

14 CFR 125

Regulations	14 CFR Part 125	Part 91 Operations

PLT413
14 CFR 25

Regulations	14 CFR Part 25	Fuel Jettisoning

PLT438
14 CFR 121

Regulations	14 CFR Part 121	Pre-flight
Regulations	14 CFR Part 121	Supplemental Oxygen

PLT439
14 CFR 125

Regulations	14 CFR Part 125	Maintenance Tasks

PLT440
14 CFR 121

Regulations	14 CFR Part 121	Crew Duty Stations
Regulations	14 CFR Part 121	Critical Phase of Flight
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Regulations	14 CFR Part 121	Qualifications

PLT444
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Regulations	14 CFR Part 121	Maintenance Log Entries

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14 CFR 63

Regulations	14 CFR Part 63	Medical Certificate Duration
Regulations	14 CFR Part 67	Medical Deficiency

PLT448
14 CFR 63

Regulations	14 CFR Part 63	Certificate

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14 CFR 121

Regulations	14 CFR Part 121	High Altitude Physiology
Regulations	14 CFR Part 121	Qualifications

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14 CFR 121

Regulations	14 CFR Part 121	Emergency Equipment

PLT463
14 CFR 63

Regulations	14 CFR Part 63	Alcohol/Drug Testing
Regulations	14 CFR Part 63	Drug/Alcohol Convictions
Regulations	14 CFR Part 63	Suspension or Revocation

PLT464
14 CFR 121

Regulations	14 CFR Part 121	Crew Duty Stations

PLT473
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Flight Controls/Primary	Ailerons
Aircraft Systems	Flight Controls/Secondary	Trim tabs

PLT478
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Starters

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Aircraft Systems	Powerplant	Starters

PLT479
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Starters
Aircraft Systems	Powerplant	Starting

PLT493
AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

Weather	Hazardous	Icing

Instrument Flying Handbook, FAA-H-8083-15

Weather	Hazardous	Icing

PLT497
Aeronautical Information Manual

Publications	AIM	Transponder Operation

PLT499

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Instruments
Aircraft Systems	Powerplant	Starting
Aircraft Systems	Powerplant	Turbine Characteristics
Aircraft Systems	Powerplant	Turbine Components/Functions

Airplane Flying Handbook, FAA-H-8083-3A

Aircraft Systems	Powerplant	Turbine Characteristics

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Powerplant	Turbine Characteristics

PLT502

Aeronautical Information Manual

Publications	AIM	Light Gun Signals

Flight Engineer Reciprocating Engine/Basic (FEN)
Sample Questions

FLIGHT ENGINEER RECIPROCATING ENGINE/BASIC (FEN)

1. Which of the following is considered an auxiliary flight control?

A—Ruddervator.
B—Upper rudder.
C—Leading-edge flaps.

Answer: C.
Learning Statement: Recall secondary flight controls –types/purpose/functionality.

2. What is the primary source of directional stability for an airplane?

A—CG position.
B—Vertical tail.
C—Horizontal tail.

Answer: B.
Learning Statement: Recall forces acting on aircraft-stability/controllability.

3. What is the purpose of electrical bonding jumpers?

A—Decrease the probability of lightning damage to such elements as control hinges.
B—Minimize electrolytic corrosion by connecting the airplane parts to form an integral unit.
C—Provide a high-resistance path for electrical equipment, thereby eliminating ground wires.

Answer: A.
Learning Statement: Recall aircraft performance-atmospheric effects.

4. Which type of oxygen system is the flight deck equipped with normally?

A—Constant-flow.
B—Phase dilution.
C—Diluter-demand.

Answer: C.
Learning Statement: Recall oxygen system-components/operating principles/characteristics.

5. (Refer to figure 40) What is the loaded CG in percent of MAC under operating conditions No. 1?

A—28.9 percent.
B—30.5 percent.
C—32.9 percent.

Answer: B.
Learning Statement: Calculate weight and balance.

LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER RECIPROCATING ENGINE/BASIC (FEN)

Topic	*Content*	*Specific*
PLT002		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Atmospheric Effects	Airspeed
Aircraft Performance	Limitations	Airspeeds
PLT003		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Center of Gravity	TCDS
Type Certificate Data Sheets and Specifications		
Weight and Balance	Center of Gravity	TCDS
PLT011		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Takeoff/Landing/Alternate Values
Aircraft Performance	Charts	Takeoff Power
PLT012		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	Flight Computations
Aircraft Performance	Computations	Fuel
PLT016		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Aircraft Performance	Computations	Fuel Dump
PLT018		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Load Factor
PLT019		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Cabin Altitude
PLT021		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Definitions
Weight and Balance	Aircraft Loading	Formulas
Weight and Balance	Center of Gravity	Computations
Weight and Balance	Center of Gravity	Shifting Weight
PLT028		
14 CFR 1		
Regulations	14 CFR Part 1	Flight Crew Member
PLT041		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Systems	Flight Instruments	Altimeter
PLT094		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Forces Acting on Aircraft
PLT108		
AC 120-58 Pilot Guide for Large Aircraft Ground Deicing		
Airport Operations	Ground Deicing	Glycol
Airport Operations	Ground Deicing	Glycol Properties/Mixtures
Airport Operations	Ground Deicing	Temperature
Airport Operations	Ground Deicing	Types
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook		
Aircraft Systems	Propeller	Deicing Boots
PLT109		
Aviation Maintenance Technician Handbook - General FAA-H-8083-30		
Aircraft Systems	Electrical	Batteries/Maintenance/Hazards
PLT114		
Aviation Maintenance Technician Handbook - General FAA-H-8083-30		
Airport Operations	Pre-flight	Aluminum Corrosion
Airport Operations	Pre-flight	Self-Locking Nuts

PLT115
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Fuel/Oil	Water Injection
Aircraft Systems	Powerplant	Detonation
Aircraft Systems	Powerplant	Improper Combustion
Aircraft Systems	Powerplant	Mixtures

PLT124
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Powerplant	Humidity Effects

PLT128
AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

Weather	Hazardous	Icing

PLT134
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Mixtures

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Airspeed	Wind effects

PLT135
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Pressurization/Valves/Controls/Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Charts	Cabin Altitude
Aircraft Performance	Charts	Cabin Pressure Altitude

PLT138
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Landing Gear	Fusible Plugs
Aircraft Systems	Landing Gear	Wheels

PLT139
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Landing Gear	Retracted Safety/Warning System

PLT164
Airplane Flying Handbook, FAA-H-8083-3A

Aerodynamics	Airspeed	Wind effects

PLT166
Aeronautical Information Manual

Aircraft Systems	Flight Instruments	Altimeter
Instrument Procedures	En Route	Altimeter Setting Procedures

PLT168
Airplane Flying Handbook, FAA-H-8083-3A

Aerodynamics	Principles of Flight	Forces Acting on Aircraft

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aerodynamics	Principles of Flight	Angle of Attack

PLT173
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Weather	Meteorology	Pressure

PLT189
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Intake/Carburetor/Inlet Heat

PLT190
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Deicing/Anti-Icing	Intake/Carburetor Icing

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Deicing/Anti-Icing	Intake/Carburetor Icing

PLT196
Aeronautical Information Manual

Weather	Aeronautical Weather Reports	ATIS

PLT205
14 CFR 91

Regulations	14 CFR Part 91	Alcohol/Drug Limitations

PLT207
14 CFR 121

Aircraft Systems	Electrical	Circuit Breakers/Fuses/Relays/Switches
Regulations	14 CFR Part 121	Emergency Lights

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Aircraft Systems	Electrical	Batteries/Maintenance/Hazards
Aircraft Systems	Electrical	Circuit Breakers/Fuses/Relays/Switches
Aircraft Systems	Electrical	Generators/Alternators/Controls/Systems

PLT212
14 CFR 1
Regulations | 14 CFR Part 1 | Definitions
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Flight Operations | Emergency Procedures | Electrical Fires
Flight Operations | Emergency Procedures | Flammable Fluid Fires

PLT234
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | CG

PLT235
Airplane Flying Handbook, FAA-H-8083-3A
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT237
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Performance | Atmospheric Effects/Density/Pressure Altitudes

PLT240
Type Certificate Data Sheets and Specifications
Weight and Balance | Center of Gravity | TCDS

PLT242
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT245
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Performance | Atmospheric Effects/Density/Pressure Altitudes

PLT248
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT249
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Improper Combustion
Aircraft Systems | Powerplant | Mixtures

PLT251
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Water Injection

PLT253
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Fuel Boost Bumps
Aircraft Systems | Fuel/Oil | Fuel System
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Weight and Balance | Aircraft Loading | Fuel Control/Shifting

PLT273
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Accumulators
Aircraft Systems | Hydraulic | Filters/System
Aircraft Systems | Hydraulic | Specifications
Aircraft Systems | Hydraulic | System Operation
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Valves

PLT303
Aerodynamics for Naval Aviators
Aerodynamics | Principles of Flight | Angle of Attack

PLT310
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Load Factor | Atmospheric Criteria

PLT313
Aircraft Weight and Balance Handbook, FAA-H-8083-1
Weight and Balance | Aircraft Loading | Definitions

PLT318
Aeronautical Information Manual
Flight Operations | Normal Procedures | Minimum Fuel Advisory

PLT324
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Oil System

PLT326
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Oxygen
Aeronautical Information Manual
Human Factors | Aero-medical | Oxygen Mask Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen
Human Factors	Aero-medical	Anoxia

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AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Oxygen

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

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AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Pneumatics	Pneumatics
Aircraft Systems	Pneumatics	Servicing

PLT342

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Exhaust Systems

PLT343

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Problems/Failure Modes
Aircraft Systems	Powerplant	Superchargers
Aircraft Systems	Powerplant	Water Injection

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Performance	Atmospheric Effects	Temperature
Aircraft Performance	Density Altitude	Humidity/Temperature/Air Density

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AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Flight Controls/Primary	Ailerons

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14 CFR 1

Regulations	14 CFR Part 1	Critical Engine

PLT351

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Propeller	Deicing
Aircraft Systems	Propeller	Feathering
Aircraft Systems	Propeller	Governor Operation
Aircraft Systems	Propeller	Propeller Forces
Aircraft Systems	Propeller	Stresses
Aircraft Systems	Propeller	Unfeathering

Airplane Flying Handbook, FAA-H-8083-3A

Aircraft Systems	Propeller	Feathering

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AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Specifications

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Powerplant	Engine Instruments

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Regulations	14 CFR Part 121	Admission to Flight Deck

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14 CFR 121

Regulations	14 CFR Part 121	Cargo/Passenger Compartment

14 CFR 91

Regulations	14 CFR Part 125	Part 91 Operations

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Regulations	14 CFR Part 63	Certificate

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Regulations	14 CFR Part 121	Cockpit Voice Recorders

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Regulations	14 CFR Part 121	Rest Periods

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14 CFR 121

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14 CFR 125

Regulations	14 CFR Part 125	Maintenance Tasks

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Regulations	14 CFR Part 67	Medical Deficiency

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PLT451
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PLT460
14 CFR 121

Regulations	14 CFR Part 121	Qualifications

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14 CFR 121

Regulations	14 CFR Part 121	Emergency Equipment

PLT463
14 CFR 63

Regulations	14 CFR Part 63	Alcohol/Drug Testing
Regulations	14 CFR Part 63	Drug/Alcohol Convictions
Regulations	14 CFR Part 63	Suspension or Revocation

PLT464
14 CFR 121
Regulations | 14 CFR Part 121 | Crew Duty Stations

PLT479
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Pre-flight/Hydraulic Lock

PLT480
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Stability/Control

PLT483
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Superchargers

PLT493
Instrument Flying Handbook, FAA-H-8083-15
Weather | Hazardous | Icing

PLT497
Aeronautical Information Manual
Publications | AIM | Transponder Operation

PLT502
Aeronautical Information Manual
Publications | AIM | Light Gun Signals

PLT509
Aeronautical Information Manual
Aerodynamics | Flight Characteristics | Vortex Generation

Flight Engineer Turbojet-Added Rating (FEJ)
Sample Questions

FLIGHT ENGINEER TURBOJET-ADDED RATING (FEJ)

1. While starting a turbine engine with an air starter, a hung start occurs before the starter disengages. Which procedure is correct?

A—Shut down the engine.
B—Increase the air velocity to the starter.
C—Slowly increase the power lever until the engine accelerates to idle.

Answer: A.
Learning Statement: Recall starter engine-starting procedures.

2. What is the highest ambient temperature that ice is likely to form in the engine inlet?

A—visibly moist air and +45 °F.
B—visibly moist air and +70 °F.
C—relatively dry air and +32 °F.

Answer: A.
Learning Statement: Recall effects of temperature-density altitude/icing.

3. Thermal protectors are used to

A—stop windshield heaters from melting the glass.
B—protect motors from overheating.
C—allow pitot heaters to melt any icing near the tube.

Answer: B.
Learning Statement: Recall electrical system-components/operating principles/characteristics/ static bonding and shielding.

4. What recovery would be appropriate in the event of compressor stall?

A—reduce the thrust lever and then rapidly advance the thrust lever to decrease the angle of attack on the compressor blades, creating more airflow.
B—reduce the thrust lever and then follow the procedures in the AFM/POH/CFM.
C—advance the thrust lever slowly to increase airflow and decrease the angle of attack on one or more compressor blades.

Answer: B.
Learning Statement: Recall turbine engines-components/operational characteristics/associated instruments.

5. **(Refer to figures 46 and 47) What is the airplane weight at the end of cruise under operating conditions No. 2?**

A—100,860 pounds.
B—101,900 pounds.
C—110,900 pounds.

Answer: A.
Learning Statement: Calculate weight and balance.

LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOJET-ADDED RATING (FEJ)

Topic	*Content*	*Specific*
PLT002		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Airspeed
PLT007		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	EPRs
PLT011		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Temperature
PLT012		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	NM/1000#
PLT016		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Aircraft Performance	Computations	Fuel Dump
PLT021		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Computations
Weight and Balance	Aircraft Loading	Formulas
Weight and Balance	Center of Gravity	Computations
Weight and Balance	Center of Gravity	Shifting Weight
PLT108		
AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft		
Airport Operations	Ground Deicing	Two Step Deice/Anti-ice
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Environmental	Rain
PLT109		
Aviation Maintenance Technician Handbook - General FAA-H-8083-30		
Aircraft Systems	Electrical	Batteries/Maintenance/Hazards
PLT110		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Landing Gear	Brake System Operation and Components
Aircraft Systems	Landing Gear	Brakes
PLT121		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Center of Gravity	Shifting Weight
PLT124		
Airplane Flying Handbook, FAA-H-8083-3A		
Aircraft Performance	Atmospheric Effects	Temperature
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Atmospheric Effects	Airspeed
PLT135		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Cabin Pressure Altitude
PLT136		
AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems		
Aircraft Systems	Powerplant	Turbine Characteristics
PLT137		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Environmental	Vapor Cycling Cooling/Component/Operation
PLT138		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Landing Gear	Chine Tires
Aircraft Systems	Landing Gear	Tires
PLT139		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Fire Control	Sensors/Testing/Operation
PLT174		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Systems	Flight Controls/Secondary	Yaw Dampener

PLT203
AC 00-6 Aviation Weather
Weather | Meteorology | High Altitude

PLT207
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Electrical | Generators/Alternators/Controls/Systems

PLT208
Aeronautical Information Manual
Flight Operations | Emergency Procedures | Declare an Emergency

PLT209
Pilot Guide Flight in Icing Conditions
Aircraft Systems | Powerplant | Engine Instruments

PLT210
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Operation
Aircraft Systems | Powerplant | Turbine Components/Functions

PLT212
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Fire Control | Extinguishing Agent/System/Pre-flight

PLT214
Aerodynamics for Naval Aviators
Aerodynamics | Flight Characteristics | Swept/Tapered Wing
Airplane Flying Handbook, FAA-H-8083-3A
Aerodynamics | Flight Characteristics | Swept/Tapered Wing
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Wing/Airfoil Characteristics
Aerodynamics | Stability/Control | Dutch Roll

PLT220
Aeronautical Information Manual
Aircraft Performance | Charts | Constant Mach

PLT236
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Wing/Airfoil Characteristics

PLT251
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Fuel/Oil | Specifications

PLT253
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Fuel Heat

PLT263
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Deicing/Anti-Icing | Anti-icing/Deicing Equipment

PLT266
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aerodynamics | Airfoils | Slots

PLT273
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Hydraulic | Hazards
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Specifications

PLT274
Pilot Guide Flight in Icing Conditions
Aircraft Systems | Deicing/Anti-Icing | Ambient Temperature

PLT278
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Performance | Atmospheric Effects | Temperature
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Instruments | Mach Meter

PLT305
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aerodynamics | Airfoils | High Lift Devices

PLT315
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Airspeed | Critical Mach Number
Aerodynamics | Airspeed | Mach

PLT318
Aeronautical Information Manual
Flight Operations | Normal Procedures | Minimum Fuel Advisory

PLT326
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Gaseous Oxygen

PLT327
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Gaseous Oxygen

PLT328
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Performance | Atmospheric Effects | Weight

PLT342
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Fuel to Oil Heat Exchanger

PLT346
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Flight Controls/Primary | Ailerons

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Controls/Primary | Ailerons

PLT407
14 CFR 121
Regulations | 14 CFR Part 121 | Initial Training

PLT413
14 CFR 25
Regulations | 14 CFR Part 25 | Fuel Jettisoning

PLT473
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Flight Controls/Secondary | Servo Tabs

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Controls/Secondary | Servo Tabs
Aircraft Systems | Flight Controls/Secondary | Spoilers

PLT479
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Starters
Aircraft Systems | Powerplant | Starting
Aircraft Systems | Powerplant | Turbine Starting Fire Procedures

PLT499
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Instruments
Aircraft Systems | Powerplant | Starting
Aircraft Systems | Powerplant | Turbine Components/Functions
Aircraft Systems | Powerplant | Turbine Compressors
Aircraft Systems | Powerplant | Turbine Sensors

Airplane Flying Handbook, FAA-H-8083-3A
Aircraft Systems | Powerplant | Turbine Components/Functions
Aircraft Systems | Powerplant | Turbine Compressors

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Powerplant | Turbine Components/Functions

PLT502
Aeronautical Information Manual
Publications | AIM | Light Gun Signals

PLT523
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aerodynamics | Airfoils | Vortex Generators

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Airfoils | Vortex Generators

Flight Engineer Turboprop-Added Rating (FEP)
Sample Questions

6. During flight with zero angle of attack, the pressure along the upper surface of the wing will be

A—equal to atmospheric pressure.
B—less than atmospheric pressure.
C—greater than the pressure below the wing.

Answer: B.
Learning Statement: Recall angle of attack-characteristics/forces/principles.

7. Oil extracts the most heat from which turbine engine components?

A—Turbine bearings.
B—Compressor bearings.
C—Accessory drive bearings.

Answer: A.
Learning Statement: Recall powerplant-controlling engine temperature.

8. Why should hydraulic fluid be filtered?

A—Water in the fluid could freeze.
B—It assures a positive feed of foam free fluid to the hydraulic pump inlet.
C—Contaminants may damage the seals and cylinder walls causing internal leakage.

Answer: C.
Learning Statement: Recall hydraulic systems-components/operating principles/characteristics.

9. What precaution should be taken when using truck-mounted deice/anti-ice equipment?

A—Run the airplane engines at idle.
B—Spray engine and APU inlets directly.
C—Spray pitot inlets and static ports indirectly.

Answer: C.
Learning Statement: Recall aircraft anti-icing/deicing-methods/fluids.

10. Which maintenance task may a flight engineer perform while operating under 14 CFR part 125?

A—Landing light replacement if there is no certificated mechanic available.
B—Remove, inspect, and replace a chip detector if the malfunction occurs in a remote area.
C—Replenish hydraulic fluid in accordance with applicable regulations and the certificate holder’s manuals.

Answer: C.
Learning Statement: Recall regulations-persons authorized to perform maintenance.

LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOPROP-ADDED RATING (FEP)

Topic	*Content*	*Specific*
PLT011		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Takeoff Power
Aircraft Performance	Charts	Takeoff Power
Aircraft Performance	Charts	Temperature
PLT012		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	Fuel
PLT016		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Aircraft Performance	Computations	Fuel Dump
PLT018		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Load Factor
PLT019		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Cabin Altitude
PLT021		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Computations
Weight and Balance	Aircraft Loading	Formulas
Weight and Balance	Center of Gravity	Computations
Weight and Balance	Center of Gravity	Shifting Weight
PLT038		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Torque in Inch-Pounds
PLT041		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Systems	Flight Instruments	Altimeter
PLT108		
AC 120-58 Pilot Guide for Large Aircraft Ground Deicing		
Airport Operations	Ground Deicing	Glycol Properties/Mixtures
Airport Operations	Ground Deicing	Precautions
Airport Operations	Ground Deicing	Procedures/Good Practices
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook		
Aircraft Systems	Propeller	Deicing Boots
PLT109		
AC 00-33A- Nickel-Cadmium Battery Op/Man/Overhaul Practices		
Aircraft Systems	Electrical	Batteries/Maintenance/Hazards
PLT110		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Landing Gear	Brake System Operation and Components
PLT117		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Deicing/Anti-Icing	Anti-icing/Deicing Equipment
PLT123		
14 CFR 25		
Aircraft Performance	Charts	Airspeed
PLT134		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Airspeed	Wind effects
PLT135		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Environmental	Pressurization/Valves/Controls/Operation
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Cabin Altitude
Aircraft Performance	Charts	Cabin Pressure Altitude
PLT136		
AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems		
Aircraft Systems	Powerplant	Turbine Characteristics

PLT137
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Vapor Cycling Cooling/Component/Operation

PLT138
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Landing Gear | Wheels

PLT139
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Fire Control | Sensors/Testing/Operation
Aircraft Systems | Landing Gear | Retracted Safety/Warning System

PLT166
Aeronautical Information Manual
Instrument Procedures | En Route | Altimeter Setting Procedures

PLT168
Airplane Flying Handbook, FAA-H-8083-3A
Aerodynamics | Principles of Flight | Forces Acting on Aircraft
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Angle of Attack

PLT173
AC 00-6 Aviation Weather
Weather | Meteorology | Atmosphere

PLT203
AC 00-6 Aviation Weather
Weather | Meteorology | High Altitude

PLT207
14 CFR 121
Aircraft Systems | Electrical | Circuit Breakers/Fuses/Relays/Switches
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Electrical | Generators/Alternators/Controls/Systems

PLT210
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Operation
Aircraft Systems | Powerplant | Turbine Components/Functions

PLT212
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fire Control | Extinguishing Agent/System/Pre-flight
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Fire Control | Extinguishing Agent/System/Pre-flight

PLT235
Airplane Flying Handbook, FAA-H-8083-3A
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

PLT243
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Propeller | Centrifugal Twisting

PLT244
Aerodynamics for Naval Aviators
Aerodynamics | Stability/Control | Anhedral/Dihedral

PLT245
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Performance | Atmospheric Effects/Density/Pressure Altitudes

PLT251
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Fuel/Oil | Specifications

PLT253
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Fuel Boost Bumps

PLT273
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Specifications
Aircraft Systems | Hydraulic | System Operation

PLT274
Pilot Guide Flight in Icing Conditions
Aircraft Systems | Deicing/Anti-Icing | Ambient Temperature

PLT278
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Performance | Atmospheric Effects | Temperature

PLT310
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Load Factor | Atmospheric Criteria

PLT318
Aeronautical Information Manual
Flight Operations | Normal Procedures | Minimum Fuel Advisory

PLT324
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel/Oil | Oil System Failure Modes

PLT326
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Oxygen

PLT327
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Oxygen

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Environmental | Oxygen

PLT342
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Turbine Compressors

PLT346
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Flight Controls/Primary | Ailerons

PLT351
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Propeller | Beta Range
Aircraft Systems | Propeller | Deicing
Aircraft Systems | Propeller | Feathering
Aircraft Systems | Propeller | Governor Operation
Aircraft Systems | Propeller | Propeller Forces
Aircraft Systems | Propeller | Stresses
Aircraft Systems | Propeller | Unfeathering

Airplane Flying Handbook, FAA-H-8083-3A
Aircraft Systems | Propeller | Feathering

PLT410
14 CFR 121
Regulations | 14 CFR Part 121 | IOE

PLT413
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Regulations | 14 CFR Part 25 | Fuel Jettisoning

PLT473
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Controls/Primary | Elevators/Horizontal Stabilizer
Aircraft Systems | Flight Controls/Secondary | Trim tabs

PLT478
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Powerplant | Starters

PLT479
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Start
Aircraft Systems | Powerplant | Starters
Aircraft Systems | Powerplant | Starting

PLT497
Aeronautical Information Manual
Publications | AIM | Transponder Operation

PLT499
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Instruments
Aircraft Systems | Powerplant | Starting
Aircraft Systems | Powerplant | Turbine Characteristics
Aircraft Systems | Powerplant | Turbine Components/Functions

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Powerplant | Turbine Characteristics

PLT502
Aeronautical Information Manual
Publications | AIM | Light Gun Signals

Flight Engineer Reciprocating Engine-Added Rating (FER)
Sample Questions

FLIGHT ENGINEER RECIPROCATING ENGINE–ADDED RATING (FER)

1. Which of the following is considered an auxiliary flight control?

A—Ruddervator.
B—Upper rudder.
C—Leading-edge flaps.

Answer: C.
Learning Statement: Recall secondary flight controls –types/purpose/functionality.

2. What is the primary source of directional stability for an airplane?

A—CG position.
B—Vertical tail.
C—Horizontal tail.

Answer: B.
Learning Statement: Recall forces acting on aircraft-stability/controllability.

3. What is the purpose of electrical bonding jumpers?

A—Decrease the probability of lightning damage to such elements as control hinges.
B—Minimize electrolytic corrosion by connecting the airplane parts to form an integral unit.
C—Provide a high-resistance path for electrical equipment, thereby eliminating ground wires.

Answer: A.
Learning Statement: Recall aircraft performance-atmospheric effects.

4. Which type of oxygen system is the flight deck equipped with normally?

A—Constant-flow.
B—Phase dilution.
C—Diluter-demand.

Answer: C.
Learning Statement: Recall oxygen system-components/operating principles/characteristics.

5. (Refer to figure 40) What is the loaded CG in percent of MAC under operating conditions No. 1?

A—28.9 percent.
B—30.5 percent.
C—32.9 percent.

Answer: B.
Learning Statement: Calculate weight and balance.

LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER RECIPROCATING ENGINE-ADDED RATING (FER)

Topic	*Content*	*Specific*
PLT011		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Takeoff Power
PLT012		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Computations	Flight Computations
Aircraft Performance	Computations	Fuel
PLT016		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Aircraft Performance	Computations	Fuel Dump
PLT018		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aerodynamics	Principles of Flight	Load Factor
PLT019		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Cabin Altitude
PLT021		
Aircraft Weight and Balance Handbook, FAA-H-8083-1		
Weight and Balance	Aircraft Loading	Formulas
Weight and Balance	Center of Gravity	Shifting Weight
PLT108		
AC 120-58 Pilot Guide for Large Aircraft Ground Deicing		
Airport Operations	Ground Deicing	Glycol Properties/Mixtures
Airport Operations	Ground Deicing	Temperature
Airport Operations	Ground Deicing	Types
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook		
Aircraft Systems	Propeller	Deicing Boots
PLT109		
Aviation Maintenance Technician Handbook - General FAA-H-8083-30		
Aircraft Systems	Electrical	Batteries/Maintenance/Hazards
PLT115		
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook		
Aircraft Systems	Fuel/Oil	Fuel System
Aircraft Systems	Fuel/Oil	Water Injection
Aircraft Systems	Powerplant	Detonation
Aircraft Systems	Powerplant	Improper Combustion
Aircraft Systems	Powerplant	Mixtures
PLT124		
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Systems	Powerplant	Humidity Effects
PLT134		
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook		
Aircraft Systems	Powerplant	Mixtures
PLT135		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Environmental	Pressurization/Valves/Controls/Operation
Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25		
Aircraft Performance	Charts	Cabin Altitude
Aircraft Performance	Charts	Cabin Pressure Altitude
PLT137		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Environmental	Pressurization/Valves/Controls/Operation
Aircraft Systems	Environmental	Vapor Cycling Cooling/Component/Operation
PLT138		
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook		
Aircraft Systems	Landing Gear	Wheels
PLT189		
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook		
Aircraft Systems	Powerplant	Intake/Carburetor/Inlet Heat

PLT190

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Deicing/Anti-Icing	Intake/Carburetor Icing

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Deicing/Anti-Icing	Intake/Carburetor Icing

PLT207

14 CFR 121

Aircraft Systems	Electrical	Circuit Breakers/Fuses/Relays/Switches

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Aircraft Systems	Electrical	Circuit Breakers/Fuses/Relays/Switches
Aircraft Systems	Electrical	Generators/Alternators/Controls/Systems

PLT210

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Operation

PLT212

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

Flight Operations	Emergency Procedures	Electrical Fires

PLT243

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Propeller	Centrifugal Twisting

PLT249

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Improper Combustion
Aircraft Systems	Powerplant	Mixtures

PLT253

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Fuel/Oil	Fuel Boost Bumps
Aircraft Systems	Fuel/Oil	Fuel System

PLT273

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Hydraulic	Accumulators
Aircraft Systems	Hydraulic	Specifications
Aircraft Systems	Hydraulic	System Operation

PLT324

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Fuel/Oil	Oil Cooler System
Aircraft Systems	Fuel/Oil	Oil System
Aircraft Systems	Fuel/Oil	Specifications

PLT326

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Oxygen

Aeronautical Information Manual

Human Factors	Aero-medical	Oxygen Mask Operation

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

PLT327

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Environmental	Oxygen

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Environmental	Oxygen

PLT342

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Exhaust Systems

PLT343

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Problems/Failure Modes
Aircraft Systems	Powerplant	Superchargers
Aircraft Systems	Powerplant	Turbochargers
Aircraft Systems	Powerplant	Water Injection

PLT346

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

Aircraft Systems	Flight Controls/Primary	Ailerons

PLT351

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Propeller	Deicing
Aircraft Systems	Propeller	Feathering
Aircraft Systems	Propeller	Governor Operation
Aircraft Systems	Propeller	Propeller Forces
Aircraft Systems	Propeller	Stresses
Aircraft Systems	Propeller	Unfeathering

Airplane Flying Handbook, FAA-H-8083-3A

Aircraft Systems	Propeller	Feathering

PLT365

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Engine Instruments
Aircraft Systems	Powerplant	Specifications

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Powerplant	Engine Instruments

PLT410

14 CFR 121

Regulations	14 CFR Part 121	IOE

PLT413

14 CFR 25

Regulations	14 CFR Part 25	Fuel Jettisoning

PLT473

Pilot's Handbook of Aeronautical Knowledge, FAA-H-8083-25

Aircraft Systems	Flight Controls/Primary	Elevators/Horizontal Stabilizer
Aircraft Systems	Flight Controls/Secondary	Trim tabs

PLT478

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Ignition System Hazard

PLT479

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Pre-flight/Hydraulic Lock

PLT483

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

Aircraft Systems	Powerplant	Superchargers

PLT497

Aeronautical Information Manual

Publications	AIM	Transponder Operation